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ABSTRACT

To determine the validity of the Boehm Test of Basic Concepts in predicting reading achievement as measured by the reading scores of the Iowa Test of Basic Skills, the Boehm test was given to 55 kindergarten children and the Iowa test was given to 42 of the same children in second grade. The results indiciated that the Boehm test appeared to be of only slight value in predicting success in reading in the second grade when measured by the Iowa test. (Author)

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THE VALIDITY OF THE BOEHM TEST OF BASIC CONCEPTS IN PREDICTING ACHIEVEMENT

BY

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The ability to read is an extremely important part of the way we function in today's world. Perhaps it is more essential now than at any other time. Modern technology has increased the need for reading in all segments of society. Keeping up with the recent changes necessitates an ability to interpret many areas of written material. Most skilled jobs require reading manuals, instructions and frequently communications. The perplexities of modern living require a literate individual. The individual who cannot read is extremely handicapped in achieving his full economic and social potential.

There has been a tremendous increase in the interest of the public in reading success and failure. Governmental agencies, private corperations, philanthropic foundations have all contributed massive amounts of money and expertise to finding out how to make the teaching of reading more successful. The problems of reading failures are reflected in other areas as well. Goldberg and Schiffman (1972) state that delinquent children, or those considered to be problem children, almost without exception, are below average levels in reading ability. Some results of this widespread inquiry and effort has been a greater attempt to define reading, evaluate programs and discover what characteristics can be used to predict future reading success.

Predicting the future, whether in science, education or even horse racing, enables one to profit from the information obtained. Little can be done about the weather and horse racing but in the field of education, intervention may alter the outcome. Clyne (1973) states that the earlier the intervention, the more effective the results. Readiness tests given in kindergarten generally identify those students

who might have subsequent difficulty in learning to read. However, the prevailing response of the schools has been to begin remedial intervention after the problem is clearly established. "We can no longer afford to wait until children are in trouble. If intervention is to be timely and effective, it is imperative to identify potentially failing readers at the earliest possible age," state de Hirsch, Feldman and Roswell (1972). Early identification is the base upon which early intervention rests. Austin (1968) indicates that this is important for both superior and inferior readers. Able readers should be given material to stimulate them, and inferior readers should receive remedial and corrective work immediately. Goldberg and Schiffman (1972) state that one of the most important contributions in dealing with reading disabilities may well be in the area of early predictive studies. Schiffman indicates that if the potential learning disability of children is diagnosed in second grade, 82% of them could resume grade level reading within two years when proper methods are used. Predictive tests given at the beginning of school, should not only identify children of varying learning capabilities, but also try to identify specific areas of handicaps. This would allow an individualized, preventative program to be established before frustration and failure become a problem.

Many tests have been devised to predict future achievement. Some test single variables and some evaluate a battery of skills. The predictors most frequently used are reading readiness tests. Reading readiness is the combination of concepts, attitudes, and interest upon which reading ability is built. It can take five to eight years

to develop but in most school systems, the magic age of six determines when a child should begin reading instruction. To help find out whether children can profit from formal instruction in reading, certain tests were developed. When children with potential reading problems are identified in kindergarten, a procedure for teaching and perhaps a pace for learning could be developed.

There are many different opinions as to what constitutes reading readiness. According to Spache (1968) readiness is not entirely a cognitive or chronological development. Such things as visual discrimination, auditory discrimination, word comprehension and verbal intelligence are components. Barrett (1972) concludes that naming of letters and numbers is the best single prognosticator of reading success. Oral and aural language abilities of a child contribute greatly to reading readiness. Ruddell (1965) states that research evidence indicates the significance of the child's comprehension and use of language in beginning reading.

The Boehm Test of Basic Concepts as described by Smock (1972) measures children's mastery of certain basic concepts relating primarily to time, quantity and space. It was designed to identify individual concepts on which children could profit from instruction. This test was developed both as an instrument of detection and basis of remediation. Smock says that certain fundamental concepts are needed for success in a school situation. The necessity of following directions in readiness procedures is often a problem. The items selected were important for this skill and occurred frequently in curriculum materials but was not part of the instructional process. He feels that the Boehm Test would

be valuable to the classroom teacher in detection and remediation of deficiencies in verbal understanding.

Most reading specialist are in agreement that early prediction of reading problems may ameliorate later difficulties. This of course assumes that identification is followed by intervention and that this intervention is prescriptive in nature based on a thorough diagnosis of the problem. The first step is finding a test or battery of tests which can indicate those students who will be successful readers and those who will not. Many tests are used and they range from those which test a single variable, to those which test a battery of skills. They range from identifying letter names and sounds to a complicated array of cognitive processes. A child's successful functioning in school frequently depends a great deal on his ability to comprehend the language used by his teacher. A test which evaluates his knowledge of basic language concepts as over, under, between, before may well indicate his ability to succeed in school related tasks and reading may also be part of this ability. If such a test could predict future reading achievement, it would be helpful in identifying those with potential problems. Since language concepts are an important aspect of reading readiness, and reading readiness is assumed to be a good predictor of reading success, a test which evaluates certain basic concepts, might also be an effective predictor of reading achievement.

Hypothesis

The purpose of this study is to investigate the validity of the Boehm Test of Basic Concepts in predicting reading achievement as measured by the total reading score of the Iowa Test of Basic Skills. It was hypothesized that there is a high positive correlation between scores obtained on the Boehm Test given in kindergarten and the reading scores obtained on the Iowa Test of Basic Skills given in second grade.

Definitions

Concept as defined is the product of understanding an abstract idea often represented by a word. Bush and Andrews (1973)

Language concepts as defined are those words which represent understandings of ideas. In the Boehm Test the language concepts used were those involved with space, time and quantity primarily.

The Boehm Test evaluates the ability to respond to concepts as presented on the printed page using pictures. Some children may have the concepts but are unable to respond in this manner. Only fifty concepts were chosen; there are hundreds. "Granted that selected concepts are valid as to curriculum content, they cannot represent the entire range of concepts that a child needs to know," as stated by Proger (1970). Following directions is an intricate part of the test. Can one distinguish between those who cannot utilize this skill and know the concepts, and those who do not?

Research Procedure

The Boehm Test of Basic Concepts was given to fifty-five kindergarten children in January, 1976. These children were from a white, predominantly middle class, suburban community in northern New Jersey. This test was given as part of a battery of tests to determine reading readiness in kindergarten. The results of the Boehm Test was originally used to determine which concepts were known and which concepts were to be taught during the year. The scores obtained were tabulated.

Forty-two of these children were given the Iowa Test of Basic Skills in April, 1978. At that time the children were in second grade. The raw scores obtained from the vocabulary and reading comprehension subtests were combined, giving a total reading score.

Results and Conclusions

The original hypothesis of this study stated that there is a high positive correlation between scores obtained on the Boehm Test given in kindergarten and the reading scores obtained on the Iowa Test of Basic Skills given in second grade. When the total group of forty-two student's scores were used, a coefficient of correlation of .60 was obtained. This is described as a moderate correlation. When the correlation was squared, the result indicated a similarity of thirty-six percent between the two types of tests. This means that almost a third of the variance (or .36) in one set of scores could be accounted for by the other set of scores. Since a correlation coefficient denotes the strength of a relationship in a sample, it was found de-

TABLE 1

CORRELATION OF SCORES OBTAINED ON THE BOEHM TEST OF BASIC CONCEPTS AND THE READING COMPONENT OF THE IOWA TEST OF BASIC SKILLS

Student	X	Y	Student	X	Y
1.	37	72	22.	27	60
2.	40	60	23.	43	76
3.	46	87	24.	43	85
4.	45	78	25.	33	72
5.	38	57	26.	49	87
6.	38	62	27.	39	74
7.	46	76	28.	47	90
8.	36	61	29.	38	74
9.	42	77	30.	49	83
10.	41	80	31.	46	88
11.	38	28	32.	43	88
12.	38	80	33.	43	80
13.	41	66	34.	41	76
14.	35	56	35.	45	72
15.	36	72	36.	39	83
16.	45	81	37.	45	70
17.	43	66	38.	38	72
18.	50	92	39.	36	74
19.	38	77	40.	35	65
20.	40	70	41.	42	89
21.	44	74	42.	42	92

Number of Students	42
Mean X	74.3
Mean Y	41
r	.60

X Score obtained on the Boehm Test of Basic Concepts

Y Score obtained on the Reading Component of the Iowa Test of Basic Skills

TABLE 11

CORRELATION OF SCORES OBTAINED ON THE BOEHM TEST OF BASIC CONCEPTS AND THE READING COMPONENT OF THE IOWA TEST OF BASIC SKILLS BY THE UPPER TWENTY PERCENT OF THE GROUP

Student	X	Y
1.	50	92
2.	49	87
3.	49	83
4.	47	90
5.	46	87
6.	46	76
7.	46	88
8.	45	81

Number of Students	8
Mean X	47.3
Mean Y	85.5
r	.48

TABLE 111

CORRELATION OF SCORES OBTAINED ON THE BOEHM TEST OF BASIC CONCEPTS AND THE READING COMPONENT OF THE IOWA TEST OF BASIC SKILLS BY THE LOWER TWENTY PERCENT OF THE GROUP

Student	X	Y
1.	37	72
2.	36	74
3.	36	72
4.	36	61
5.	35	65
6.	35	72
7.	33	72
8.	27	60

Number of Students	8
Mean X	34.4
Mean Y	66.5
r	.39

sirable to apply a test of significance to the coefficient. The coefficient of .60 was found to be significant at the .01 level of confidence and implies that this coefficient was higher than that obtainable by chance.

When the upper and lower twenty percent of the students were isolated for statistical treatment, the correlation decreased. The high scoring twenty percent on the Boehm Test produced a correlation of .48 with the Iowa Test of Basic Skills as indicated by Table 11. The correlation between the two tests for the lower scoring twenty percent was .39 as indicated by Table 111. It might be of interest to note that all students in the upper group on the Boehm Test received scores above the mean for the total group on the Boehm Test, and all the students in the lower group obtained scores below the mean. The validity of the Boehm Test as a predictor of reading success is greater for the entire group than for the upper or lower twenty percent of the sample. Based on the results of the study, the general conclusion is that there is a moderate correlation between the Boehm Test of Basic Concepts and the Iowa Test of Basic Skills. The Boehm Test would appear to be only of slight value in predicting success in reading in the second grade when measured by the reading component score of the Iowa Test of Basic Skills.

Discussion

Teachers and administrators often want to know the relationship between certain measured aspects of pupils. When it is a coefficient of correlation, this relationship can be used to predict future performance of individuals on the basis of past performance of a sample. When the

score obtained indicates future problems, early intervention would be desirable. Austin (1968) felt that early identification is important for both superior and inferior readers. Material to stimulate should be given to the more able, and remedial and corrective work given to those with potential problems. The question raised by this study was whether the Boehm Test could show if there was a need for intervention. Since this test is given in kindergarten, it was thought that early discovery of atypical readers might be possible.

Reading readiness tests, according to Millerich (1975) offer typical correlations with beginning reading from .40 to .60. In a study of prediction of success in beginning reading, Henderson and Long (1969) found four measures to be equally good for white children. They were teacher rating, readiness, I.Q. and age. The correlations for these measures were from .40 to .46. Jacobson (1970) indicated that kindergarten teacher behavior analysis was the best single predictor of first grade reading achievement. It was effective eighty percent of the time. This concurs with the conclusion of de Hirsch, Feldman and Roswell (1972).

The original hypothesis that there would be a high correlation between the Boehm Test and the reading score of the Iowa Test of Basic Skills was not supported by the results of this study. However the correlation of .60 indicates a moderate degree of correlation. Therefore this thesis suggests that the Boehm Test of Basic Concepts could be used with some degree of effectiveness to predict future reading achievement.

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